

Endline Assessment of Students' Learning Outcome for School-Based MLE Programme in Rajasthan

Final Report

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Contents

Table of Contents

1.	Introduction	2
2.	Project Background	3
3.	Programme Components	4
	3.1 Essential elements of Multilingual Education	4
	3.2 Sociolinguistic mapping Exercise	4
	3.3 Key Strategies of the Programme	5
4.	Endline Assessment	7
	4.1 Study Methodology and key competencies	7
	4.2 Sample Selection	8
	4.3 Study Implementation	8
	4.4 Analysis and Interpretation	9
	4.5 School and Child Background and Characteristics	9
5.	Study Limitation	10
6.	Key Findings	11
	6.1 The Overall Impact of the Programme	11
	6.2 Impact of the Programme towards reducing zero scores at endline	12
	6.3 Impact of the Programme towards bridging children's home language with the medium of instruction	13
7.	Sub-Task Wise Analysis	14
	7.1 Impact of the Programme on Picture Identification by Students	14
	7.2 Impact of the Programme on Listening Comprehension by Students	15
	7.3 Impact of the Programme on Picture Narration by Students	16
	7.4 Impact of the Programme on Letter Identification by Students	17
	7.5 Impact of the Programme on Akshar Identification by Students	18
	7.6 Impact of the Programme on Identification of Familiar Words by Students	19
	7.7 Impact of the Programme on Oral Fluency of Students	21
	7.8 Impact of the Programme on Reading Comprehension by Students	22
	7.9 Impact of the Programme on Writing Skill of Students	23
8.	Effect Size	24
9.	Conclusion and Recommendation	25
	9.1 Conclusion	25
	9.2 Recommendation	25
	Appendix – A	26

1. Introduction

Language Learning Foundation (LLF) signed a 3-year MOU with the Rajasthan Council of Secondary Education (RCSE) in February 2018 for developing teacher capacity and implementation of a multilingual program 'Ajuvaroo'(light) in 40 selected government schools in Dungarpur district of Rajasthan. The project is supported by the Great Eastern CSR Foundation - a CSR initiative of The Great Eastern Shipping Company Ltd and Greatship (India) Ltd. The project aims to develop a systematic approach for home-to-school language transition and practices for creating strong language and literacy skills in Hindi by the end of grade 3 and for improvement in children's learning outcomes in Hindi.

Project Ajuvaroo has been implemented since 2019 in 40 schools

spread across two blocks of Sagwara and Simalwara in Dungarpur district. Most children in the schools belong to indigenous tribes and speak a language called Wagdi and its dialects. They have little or no understanding of Hindi, the language used as the language of instruction when they start grade 1. The program aims to maintain and develop Wagdi (children's L1), while gradually building basic vocabulary and understanding of Hindi.

The project also had a component of a three-year study to assess the impact of this literacy program by comparing the changes in the language skills of children in a sample of schools benefiting from the program for three years, with the changes in the same in a sample of matching comparison schools not getting benefits from the program during the same time. Student assessment data was collected by third party in project schools before the launch of the program from start-of-Grade 1 children in August 2019 (baseline) and after three years of the program from end-of-Grade 3 children in April 2022 (endline); language skills data from comparison school children was also collected following the same timeline. The results of impact evaluations show that there is a significant increase in the learning outcomes of the students at the project school in comparison to the comparison schools.

Why is inclusion of home languages in classrooms crucial?

Medium of instruction is a major reason for exclusion of students and critical for learning outcomes. Students either drop-out or face challenges in grasping non-trivial concepts if their home language/mother tongue is different. According to the World Bank, 37% of the students in the world study in a language they are not familiar with. Research studies indicate that around 35% of students in India's primary schools face moderate to severe learning disadvantages due to a gap between their home and school languages.

National education policy 2020 also directs to bridge the language gap by maximising the use of home language/mother tongue by the teacher wherever possible. Accordingly, efforts are made in preparing high-quality bilingual textbooks and teaching-learning materials for science and mathematics. However, there is still a lot to be done.

2. Project Background

District, Dungarpur lies in southern Rajasthan on the border with Gujarat. It has an area of 3,770 km and a population of 13,88,906 in 2011. Of the total population, about 4 percent are Scheduled Castes and 71 percent Scheduled Tribes. The literacy rate of the district is abysmally low, about 60.8 percent. At the time of the 2011 census, 96 percent of the population were speaking Wagdi in the project location. The language of instruction at school is Hindi and children enrolling in the school have a very limited understanding of Hindi. The scoping study carried out by LLF indicated limited exposure of Hindi outside school for the children. Hence, there is no way for them to learn Hindi outside school. In addition, the level of parental literacy is also low.

On the other hand, at the level of education administration, there is a low level of acceptance for Wagdi and its variants to be used as a formal medium of instruction immediately. Hence, there is a need to take steps to overcome and bridge the gaps in the system.

Multilingual Education (MLE) is a response to the above-mentioned problem and has been very useful in many parts of India including Rajasthan, Odisha, West Bengal, Tamil Nadu, and states with a large tribal population. MLE Programme is a step process, which provides the first level of education to the student in their home language followed by the 2nd step, which builds fluency in the mother tongue and slowly introduces oral fluency in the second language then to further learning in the second language.

3. Programme Components

In the above context, the Multilingual Education Programme named 'AJUVAROO' is being implemented by the Language and Learning Foundation (LLF) in 40 schools of Dungarpur district in Southern Rajasthan since July 2019.

The project seeks to integrate mother tongue-based teaching-learning in early grades alongside the first language (regional language) to strengthen the language and literacy skills of students.

3.1 Essential elements of Multilingual Education

LLF has identified the following essential elements for their work:

- Children's first languages (L1s) are used formally in the classroom.
- Languages are not taught and learnt in water-tight compartments; fluid and flexible use of languages is encouraged.
- An MLE classroom reflects tolerance and mutual respect for all languages and cultures.
- A multilingual approach to teaching and learning is used across the curriculum.
- Appropriate second-language teaching and learning methods for gradual learning of unfamiliar languages.
- A multilingual approach is also multicultural, bringing children's cultural practices and experiences into the classroom.

3.2 Sociolinguistic mapping exercise

The best way to support children from a non-dominant language background is to use their home language as a medium of instruction for several years, while gradually introducing additional languages. However, sociolinguistic situations in India are varied and complex and a 'one-size-fits-all' approach for using children's languages is not appropriate. An understanding of the language contexts of schools and classrooms is a prerequisite for developing appropriate strategies for the inclusion of children's first languages. A simple sociolinguistic mapping exercise is necessary to identify the approach and strategies for including children's languages.

Before beginning the implementation of the MLE programme in Dungarpur, LLF conducted a variety of studies (mentioned in Table 1.1 below) to try and capture the nuances of the local context to be able to design socially and culturally responsive curriculum and pedagogy. All these studies were conducted around one year before the implementation of the programme.

Table 1.1: Studies conducted in the intervention schools

S.no.	Name of the study	Purpose of the study
1	Situation Analysis Study	To understand <ul style="list-style-type: none"> ● children's (grades 1 to 3) knowledge of and exposure to Hindi, ● and teachers' beliefs and practices regarding the use of children's first language (Wagdi) in language classrooms.
2	Linguistic Study of	Linguistic comparison between Hindi and Wagdi at the levels

	Wagdi and Comparison with Hindi	of phonemes (sounds of the language), morphemes (meaningful parts of words), lexicon (words/vocabulary), and syntax (sentence structure), with the aim of gaining insight for curricular and pedagogic design.
3	Language Use Study	To understand how children use Wagdi and Hindi in the school environment and in their home communities.
4	Community Knowledge Study	To gather socio-cultural knowledge of the local community and mould into pedagogic resources, and to adapt these for inclusion into curriculum and teaching-learning processes inside schools.

Scoping studies have shown that children have limited exposure to Hindi outside of school; there is a low level of parental literacy; and that most teachers know children's L1s. In general, at the level of educational administration, there is a low level of acceptance for Wagdi and its variants to be used as formal media of instruction immediately. Detailed findings of the study are shown below:

Table 1.2: Major findings on the scoping studies before implementation of the project

- Wagdi is the primary language spoken in the region--at home, in the community, and in the marketplace.
- Based on social and geographical factors, Wagdi has various varieties and proximity with languages such as Gujarati, Hindi, Mewari or Malwi.
- Hindi is the official Medium of Instruction in schools; it is also the language of the textbooks.
- Wagdi and Hindi share many linguistic similarities since they belong to the same Indo-Aryan language family.
- Wagdi does not have a script of its own; Devanagari script can be used to write Wagdi. Very little to no written material in Wagdi has been published.
- All the children in a classroom come from similar language backgrounds, i.e, they speak one of the different variants of Wagdi.
- Wagdi speaking children have very little to no knowledge of Hindi when they enter school.
- Children have limited exposure to Hindi outside school. Parental literacy levels are low; and thus, children do not receive a lot of language and literacy learning support at home in Hindi.
- Most teachers can speak or understand Wagdi.
- Teachers have a generally positive view for using Wagdi in classrooms. However, Wagdi is not considered appropriate for formal use in education and cannot be used as MOI at once.

3.3 Key Strategies of the Programme

Some of the key strategies and principles used in the 'Ajuvaroo' approach are listed below.

1. **Amalgamation of MLE Practices:** The 'Ajuvaroo' approach to multilingual education may not be qualified specifically as an MLE model; more appropriately it is a strategic approach that brings together insights from various MLE models to bring in students' L1 in teaching-learning processes in a systematic and formal manner in early years of learning, while maintaining synergy with already existing state curriculum and assessment routines.
2. **Children's home languages (L1) are used formally in the classroom** and are used as resources for learning additional languages and content in other subjects. The teacher would herself use,

allow, and encourage children to respond in their L1, use their L1s in group discussions, read-aloud or tell stories in both L1 and L2, explain difficult words and concepts using L1 etc. Children's home language is used extensively in the initial grades (at least in grades 1-2) across subjects for explaining any difficult concept or new information, higher order thinking, reasoning, analysis, creative expression and meaning making. For activities on teaching phonological awareness and decoding, familiar Wagdi words and expressions are used systematically in the initial stages of the instructional design.

3. **Mixed-language usage or 'translanguaging'¹ is encouraged** in the classroom. Languages are not taught and learnt in water-tight compartments. This approach is based on the concept of 'multilingual habitus'², which acknowledges the presence of multiple linguistic resources of multilingual children and does not label their language proficiencies as deficient when measured against monolingual ideas of language purity or native speaker competence.
4. **Children learn new languages (L2) by using their strong or familiar language (L1)** as a scaffold. Sound principles of L2 acquisition are used by providing ample comprehensible input³. Production of L2 by children can be delayed; the "silent period" is respected where children's receptive skills in L2 are present but productive skills are not yet fully developed. Thus, learning outcomes in L2 may be delayed, and not forced.
5. An MLE classroom reflects **tolerance and mutual respect for all children's languages** and cultures. Only one language does not remain dominant. A multilingual approach needs to be multicultural as well, where children's cultures and experiences are brought into the classroom to build new knowledge using them, which may not be represented in the textbooks in a planned manner.
6. A **multilingual approach for teaching-learning is used across the curriculum**, including language, environmental science as well as mathematics periods, where any difficult text or concept or higher order thinking, and reasoning work is carried out using children's home language. Similarly, use of L1 as a scaffold is encouraged across all grades in elementary schools, and not just kept limited to early 2-3 years of learning.
7. **Balanced Literacy Approach for Learning of L1 and L2:** Since this approach caters to learning of language and literacy in early years of a child's school life, it incorporates effective and appropriate methods of early language and literacy teaching. This approach prescribes the 'Balanced Literacy Approach' that recommends equal attention given to oral language work, decoding, reading, and writing. The curriculum and materials are designed to give equal opportunities for oral language development as well as learning of decoding skills. Classroom discussions involving higher order thinking skills are integrated with ample opportunities for reading—read aloud, shared reading, guided reading as well as independent reading by children.

¹ (Garcia, 2014)

² (Benson, 2013)

³ (Krashen, 1995)

4. Endline Assessment

4.1 Study Methodology and key competencies

To assess the impact of the programme on the students' learning outcomes, a quasi-experimental evaluation study was undertaken through an independent agency. Professional agencies were engaged for carrying out the baseline and endline assessments.

Baseline assessment was carried out with Grade 1 at the beginning of the programme, whereas the endline assessment was carried out at the end of Grade 3, with the same cohort of students. The evaluation was designed with a difference-in-differences (DiD) approach to measure the extent of change in learning outcomes of students in intervention schools, vis-a-vis comparison schools.

The key competencies assessed were:

1. Listening Comprehension – Wagdi and Hindi
2. Speaking – Wagdi and Hindi
3. Picture narration including vocabulary – Wagdi and Hindi
4. Reading – Hindi
5. Writing – Hindi

The above assessment was divided into 9 sub-tasks, which included both timed and untimed tasks. Timed tasks include 1-minute assessment of letter identification, syllable identification, familiar word reading and oral reading fluency. Untimed tasks include identification of pictures, listening comprehension, reading comprehension, picture narration and dictation of sentences.

Students in each school were assessed on all nine sub-tasks- as detailed in the Table 3.1 below.

Table 3.1: Distribution of tasks and sub tasks for the assessment of student's language and literacy skills

S. No.	Sub-Task	Sub -Task Description
1	Identification of Pictures (Hindi Vocabulary)	Include 20 picture cards of common objects i.e. fruits, animals, food, vegetables, birds, etc. The task requires identifying and naming the pictures in Hindi.
2	Listening Comprehension	A story of 6-7 sentences is narrated to students in Hindi. Students are expected to answer the questions based on the story in Hindi or Wagdi.
3	Picture Narration	A picture story (using 5 picture cards) is narrated to students in Wagadi by placing each picture card in sequence of events happening in the story. Students are expected to re-narrate the story in Wagadi using the same picture cards.
4	Letter Identification (times task- 1 minute)	A grid with 100 letters is presented to students and they are expected to read as many of the letters as they can in one minute.
5	Syllable identification	A grid with 60 words is presented to students and they are expected to read as many of the words as they can in one minute.
6	Familiar Word Identification (times task 1 minute)	A grid with 50 familiar words is presented to students and they are expected to read as many as they can in one minute.
7	Reading Comprehension	Task includes the reading out of a passage in Hindi loudly by the students and then answering questions about the passage

8	Oral Reading Fluency (timed task 1 minute)	Task includes the timed reading of few sentences in Hindi by the students
9	Writing Task (dictation)	Task students the dictation of 2 sentences (5 words in each sentence) in Hindi.

4.2 Sample Selection

A representative sample of students was chosen using a stratified sampling technique for both intervention and comparison schools for the evaluation. The sample of schools selected for the evaluation remained same across the baseline and endline. The sample consisted of 20 schools of which 10 intervention schools and 10 comparison schools spread across the two blocks of Sagwara and Simalwara 10 schools from each (5 intervention and 5 control).

Students in each of the 20 schools were assessed on all nine sub-tasks. There was no sampling of students done at the school level due to low attendance. The shortfall in the sample in intervention or comparison was covered from the same sample (comparison/intervention) to avoid underrepresentation of one subgroup in an assessment and maintain accurate results

The total number of students assessed from 20 government schools is shared in Table 3.2. There is a difference in sample size covered during baseline and endline assessment in Simalwara and Sagwara; however, it has not affected the analysis as the unit of analysis remained district.

Table 3.2: Distribution and Comparison of the Endline Assessment sample with the Baseline Assessment

Sample Distribution	Baseline Assessment			Endline Assessment		
	Sagwara	Simalwara	Total	Sagwara	Simalwara	Total
Intervention	39	50	89	41	48	89
Comparison	28	43	71	29	42	71
Total	67	93	160	70	90	160

Source: Primary Survey

4.3 Study Implementation

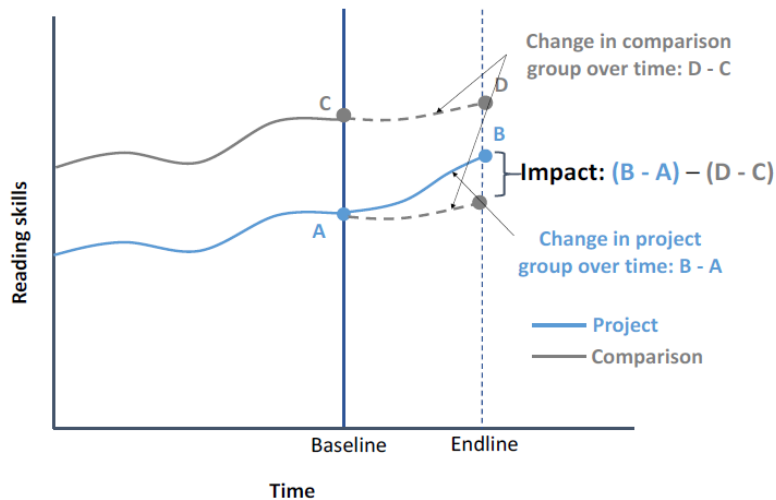
The implementation process included the recruitment of a qualified field team to execute the test in schools, providing them training on the assessment tool and scoring of students' responses. The team conducted the test in each sampled school and scored the students' responses, as per the guidelines provided by LLF.

Prior to test administration, the team of field supervisors and field enumerators were given a 2-day training to understand the tool, administration and scoring method. The training was facilitated by LLF team. The team was also given hands on experience by conducting the test in schools. The field visit was monitored by the experts from LLF and feedback and queries by participants were discussed after the school visit.

4.4 Analysis and Interpretation

The assessment is focused on the student learning outcomes, which has been analysed following the DiD approach to measure the overall impact and efficacy of the programme. DiD helped in estimating intervention effects by comparing the pre- and post-intervention differences in the outcome of an intervention and a comparison group. DiD also helped in comparing change over time in intervention and comparison outcomes. Graphical representation of Difference-in-Difference Methodology used in the Endline Evaluation is shown below.

Figure 3.1: Graphical representation of Difference-in-Difference Methodology used in the Endline Evaluation



The study estimated the effect size for the assessments, to measure the extent of the impact of the programme implemented⁴. It is important to mention that the significance level of the results was measured at 80% confidence, where the error margin was 5% and 50% population coverage as the sample of students was 160, which was on the lower side.

4.5 School and Child Background and Characteristics

Of the 160 students assessed from 20 government schools, 89 are from intervention and 71 from comparison schools, the same as during the baseline.

Slightly higher proportion of girls (51.8 percent) were contacted during the endline assessment than the baseline assessment (48.7 percent). This shows that a greater number of girls were present on the assessment day (Table 3.3).

Table 3.3: Distribution of sample (endline and baseline assessment) by their Gender

Gender	Baseline Assessment						Endline Assessment					
	Sagwara		Simalwara		Total		Sagwara		Simalwara		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Girl	27	40.9	51	54.2	78	48.7	37	52.8	46	51.1	83	51.8

⁴ An effect size is the mean difference in gains between the project and comparison schools divided by the individual standard deviation of scores in project and comparison schools.

Boy	39	59.0	43	45.7	82	51.2	33	47.2	44	48.9	77	48.2
Total	66	100	94	100	160	100	70	100	90	100	160	100
Source: Endline Assessment												

About 83 percent of students who were assessed at the endline are from below the poverty line, while at the baseline 75 percent students were from similar economic strata.

Further, 94 percent students who were assessed during the endline assessment belong to Scheduled Tribe followed by 4 percent from Other Backward Class and 1 percent Scheduled Caste. The social group wise composition was almost similar in the baseline assessment.

Analysis of outcomes, based on the above economic and social factors, indicated no statistically significant difference between the intervention and comparison group students.

5. Study Limitation

The evaluation faced the limitation posed by low attendance, leading to challenges in sampling. Absenteeism and the challenges posed by the pandemic which led to loss of almost two school-based learning years during the project duration made tracking the same students across baseline and endline very difficult. In addition to this, ensuring the same number of students in the school-wise samples also turned out to be a challenge due to low attendance. However, the sampling bias may not impact the study findings as children background characteristics showed no significant difference between Intervention and comparison as well as baseline and endline.

The study could not estimate the effect size for the sub-tasks which had respective baseline scores of zero. The significance level was measured at 80% confidence, where the error margin was 5% and 50% population coverage as the sample of students was 160, which was on the lower side.

6. Key Findings

6.1 The Overall Impact of the Programme

Table 4.1 provides a top-line view of the baseline (July 2019) and endline (April 2022) assessment results in the intervention and the comparison group for all the nine sub-tasks. The analysis indicates that the students from intervention schools have performed better in all the skills vis-a-vis students in the comparison schools. In terms of reading fluency, by the end of the project, students at the intervention school could read 48.3 words per minute, while students in the comparison schools could only read 14.9 words per minute.

Higher gains in intervention schools over comparison were seen in all higher order language skills such as familiar word reading (55%) and reading comprehension (54%), while relatively lower gains were observed in skills such as picture narration (23.8%) and picture identification (26%). Picture narration, picture identification, and listening comprehension are some of the skills where the comparison school students have also scored a moderately high mean score.

Students assessed in the project schools had statistically significant improvement from baseline to endline in all the skills when compared with children in comparison schools.

Table 4.1: Reading and Writing Assessment Results at Baseline and Endline

Sub-tasks	Maximum Score in Endline	Baseline				Endline				Difference in Difference (DiD)	DiD (%)
		Comparison		Intervention		Comparison		Intervention			
		Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Picture Identification	20	4.9	3.1	5	2.8	12.5	3.9	17.9	2.2	5.3	26.5%
Listening Comprehension	5	0.4	1	0.9	1.2	2.6	1.7	4.8	0.6	1.7	34.0%
Picture narration	16	1.4	2.8	1.3	1.8	6.1	2.7	9.8	2.8	3.8	23.8%
Letter Identification	100	2.9	5.1	1	2.1	29.3	24.5	74	18.7	46.6	46.8%
Akshar Identification	60	0.2	0.4	0	0.1	18.3	21	45.5	14.8	27.4	45.7%
Familiar Word Identification	50	0	0	0	0	13.9	14.2	41.4	12.8	27.5	55.0%
Oral Fluency		0	0	0	0	14.9	16.8	48.3	14.4	33.4	54.8%
Reading Comprehension	5	0	0	0	0	1.6	1.7	4.3	1.2	2.7	54.0%
Writing Task	10	0	0	0	0	3.8	2.4	7.3	1.6	3.5	35.0%

In addition to the average gains of students in intervention and comparison schools, the study also analysed whether such gains at endline⁵, were equitable or not. Equity in improvement in learning

⁵ The analysis is presented only for the endline assessment, as the scores in baseline assessment were ~0 in 5 of the sub-tasks. In rest of the 4 sub-tasks with non-zero scores, the scores were extremely low, leading to marginal differentiation between the 25th, 50th and 75th percentile scores.

outcomes is established only when, along with improvement in average scores, the difference between the scores of students in the higher bands of learning levels and the lower bands of learning levels is significantly reduced.

To analyse this, the scores of students at the 25th percentile, 50th percentile and 75th percentile were compared and the interquartile range - the skill-wise difference between 75th percentile score and the 25th percentile score - was calculated across baseline and endline in both intervention and comparison schools. The table below highlights two major points on equity achieved through the programme:

- At endline, the scores of students in the lower quartile (25th percentile), median (50th percentile) and upper quartile (75th percentile) were significantly higher in the intervention school's vis-a-vis comparison schools, implying that the gains reflected in the higher average scores was distributed among students at different learning levels in the intervention schools.
- The interquartile range is lower for the intervention group at the endline, vis-a-vis the comparison group, which further highlights the equity in the learning achieved in intervention schools.

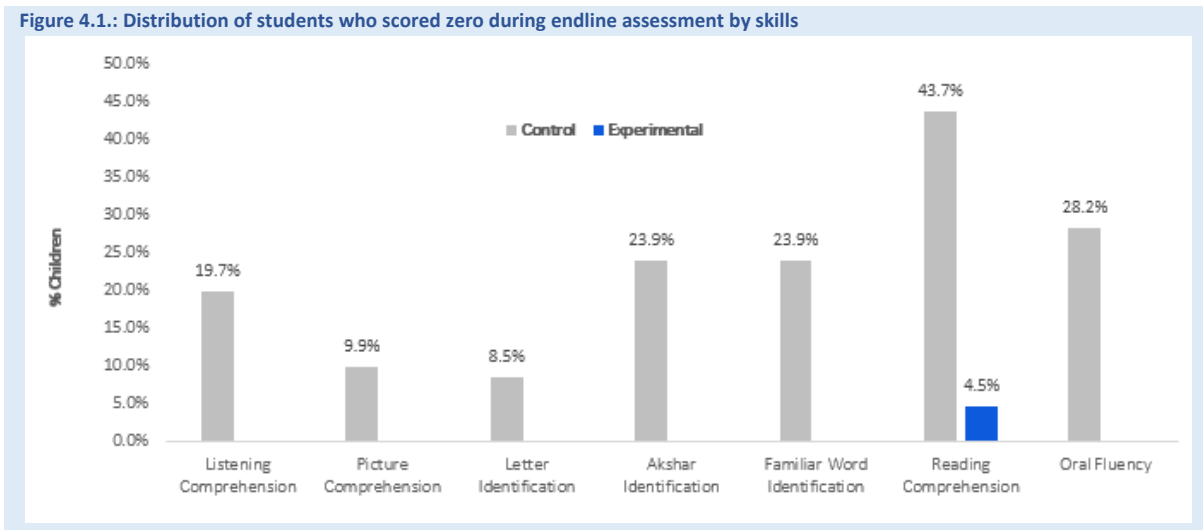
Table 4.2: Percentiles Score (Comparison vs intervention)

Skills	Comparison				Intervention			
	25 th percentile	50 th percentile	75 th percentile	IQR*	25 th percentile	50 th percentile	75 th percentile	IQR*
Picture Identification	10	13	15	5	17	19	20	3
Listening Comprehension	1	3	4	3	5	5	5	0
Picture Narration	7	7	7	0	7	9	12	5
Letter Identification	8	25	48	40	59	78	90	31
Akshar Identification	1	8	35	34	36	50	60	24
Familiar Word Identification	1	11	26	25	36	50	50	14
Reading Comprehension	0	1	3	3	4	5	5	1
Oral Fluency	0	7	25	25	40	54	60	20
Writing Task	2	2	5	3	7	8	8	1
*Interquartile Range								

6.2 Impact of the Programme towards reducing zero scores at endline

Analysis of the graph 4.1 indicates that the programme has been very effective to build skill set of students, as almost all the students in the intervention schools managed to receive positive scores in each of the nine sub-tasks in comparison to students from comparison school, where a significant proportion of students (8.5% to 43.7%) scored zero in 7 sub-tasks out of the total 9 assessed.

Figure 4.1.: Distribution of students who scored zero during endline assessment by skills



6.3 Impact of the Programme towards bridging children's home language with the medium of instruction

Wagdi (L1) is the home language for all the students in the intervention and comparison schools while Hindi(L2) is the medium of instruction in the school. The project aims to bridge the children's home language with the medium of instruction.

In the 'picture identification' subtask, the students were shown 20 pictures of everyday objects and were asked to identify the same in L2. The purpose of the task was to measure the proficiency attained by the students in L2 at the end of Grade 3 in intervention schools vis-à-vis comparison schools.

The analysis of the use of L1 in picture identification shows that 48% of the students in comparison schools used L1 at least once in their responses, while in intervention schools only 18% of the students used L1. Additionally, the average number of pictures identified in Wagdi by the students (who used Wagdi at least once) was 4.4 in comparison school's vis-a-vis 1.5 in intervention schools.

In listening comprehension, evaluators narrated a story to students in L2 and then asked five questions based on the story. The percentage of students who answered at least one or more questions in L1 was 27% in comparison schools and 6% in comparison schools. Of the students who had answered at least one question in L1, the average number of questions answered in L1 was 1.36 for comparison schools and 1 for intervention schools.

The analysis of the use of L1 and L2 by students in tasks involving oral language competencies clearly shows that the students in intervention schools were more responsive in L2, vis-a-vis students in comparison schools. The difference was more significant in 'picture identification', where they are identifying objects from their day-to-day life.

One of the reasons for relatively fewer responses in L1 in the sub-task of listening comprehension could be the nature of the assessment conducted, where the story was narrated to students in Hindi (L2). Despite this, more than one-fourth of the assessed students in comparison schools responded in L1,

which is reflective of the limited development of oral competencies in L2 among students in comparison schools.

7. Sub-Task Wise Analysis

7.1 Impact of the Programme on Picture Identification by Students

In picture identification, 20 picture cards were shown to the students and they were asked to identify the picture by name in Hindi, each carrying a score of 1 point each. The unanswered response was also recorded in the same grid. The result, as well as the impact of the picture identification task, is analysed and explained below.

Table 4.3 provides a top-line view of the baseline (July 2019) and endline (April 2022) assessment results by the intervention and the comparison group in the picture identification task. The result indicates that the students from intervention schools performed better - they could secure significantly higher three year-gains i.e. 5.3 points (26.5%) more than the comparison group,

The mean scores of students at the endline also indicate the difference in learning outcomes of students in intervention (17.9) vis-a-vis comparison schools (12.5). This is especially significant when compared with the negligible difference in mean scores between the intervention and comparison groups, at baseline. (5. Additionally, boys (26%) gained slightly higher than the girl (24%) (Table 4.3).

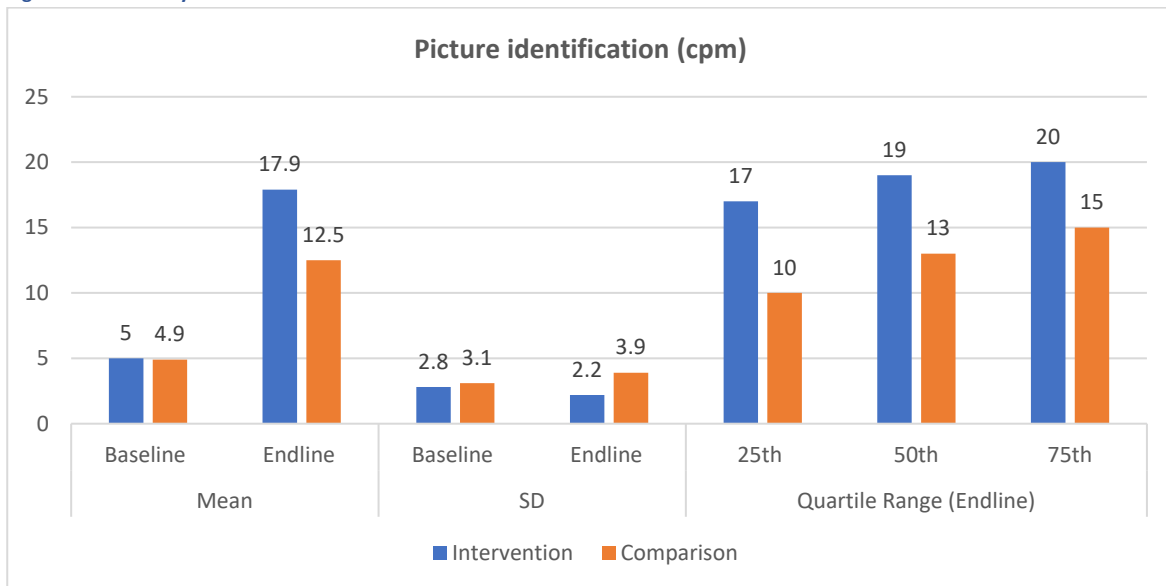
Table 4.3: Picture Identification Results at Baseline and Endline

Intervention Groups		Intervention			Comparison		
Gender		Boy	Girl	Total	Boy	Girl	Total
Baseline	n	48	41	89	34	37	71
	mean (Actual)	5.3	4.7	5	5.2	4.6	4.9
	SD (Actual)	3	2.6	2.8	2.8	3.3	3.1
Endline	n	44	45	89	33	38	71
	mean (Actual)	18.1	17.6	17.9	12.4	12.7	12.5
	SD (Actual)	2.1	2.3	2.2	3.4	4.4	3.9
Gain		12.8	12.9	12.9	7.2	8.1	7.6
Difference between Gains in Project and Comparison Groups		Boys=5.6			Girls=4.8		Total=5.3
% Difference between Gains in Project and Comparison Groups		Boys= 26.0			Girls=24.0		Total=26.5

Interquartile analysis was also carried out for comparison of sub-task wise scores obtained by the students in comparison and intervention schools during the endline assessment. The interquartile analysis indicates a lower interquartile range in intervention schools (3) than that in comparison schools (5), which further highlights the progress towards equity in intervention schools.

The summary of the analysis of picture identification is presented in the graph below.

Figure 4.2: Summary of Performance of Students for Picture Identification



7.2 Impact of the Programme on Listening Comprehension by Students

In listening comprehension, the enumerator narrated a story to the student and then five questions were asked which were based on the narrated story. The objective of the questions was to check the ability of the students to understand the meaning of the words, phrases, and sentences and answer the questions.

Table 4.3 provides a top-line view of the baseline (July 2019) and endline (April 2022) assessment results by the intervention and the comparison group in the listening comprehension task. The results indicate that the students from intervention schools have performed better; they could secure significantly higher three-year gains i.e., 34.0% points higher than the students from comparison schools.

At the endline, a wide difference was observed between the mean score of students assessed in the intervention schools (4.8) and the mean score of students from the comparison schools (2.6), in this sub-task. When compared with the difference in the intervention mean score (0.9) and comparison mean score (0.4) at the baseline, this difference is significant.

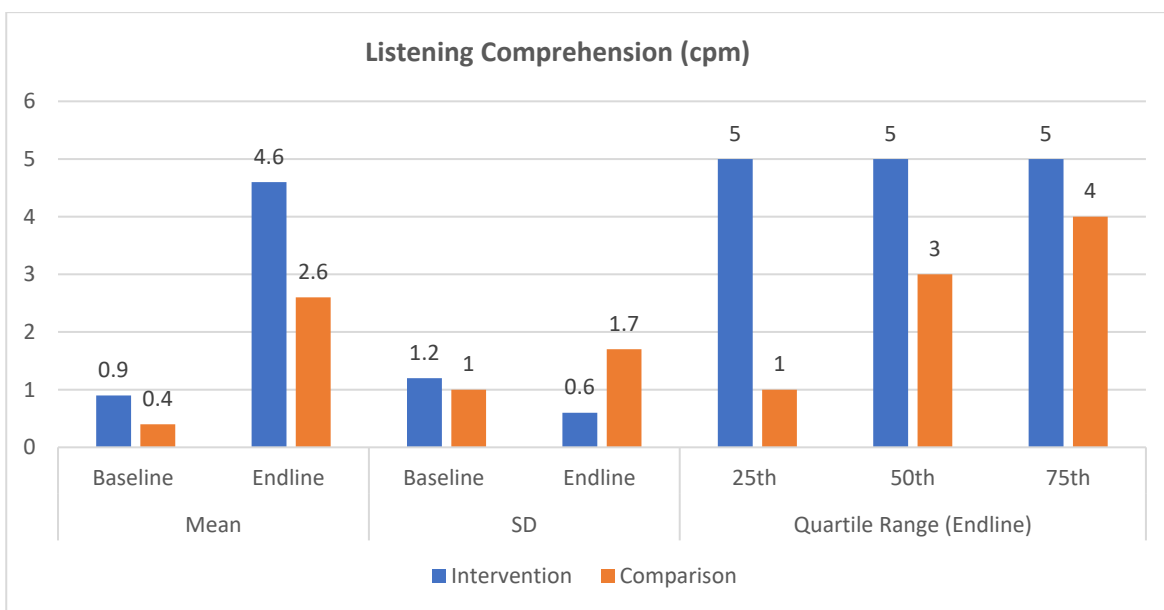
Table 4.4: Listening Comprehension Results at Baseline and Endline

Intervention Groups		Intervention			Comparison		
Gender		Boy	Girl	Total	Boy	Girl	Total
Baseline	n	48	41	89	34	37	71
	mean (Actual)	1	0.8	0.9	0.5	0.4	0.4
	SD (Actual)	1.3	1.2	1.2	1.2	0.9	1
Endline	n	44	45	89	33	38	71

	mean (Actual)	4.9	4.7	4.8	2.8	2.4	2.6
	SD (Actual)	0.3	0.8	0.6	1.7	1.7	1.7
Gain		3.9	3.9	3.7	2.3	2	2.2
Difference between Gains in Project and Comparison Groups		Boys=1.6		Girls=1.9		Total=1.7	
% Difference between Gains in Project and Comparison Groups		Boys= 32.0		Girls=38.0		Total=34.0	

Additionally, girls made higher gains (38%) and a statistically significant improvement from baseline to endline when compared with boys whose performance growth was 32.0% (Table 4.4).

Figure 4.3: Performance for Listening Comprehension by students



Overall, 53.8 percent of students answered all the five questions correctly; Further, 8.8 percent students were unable to respond to any question of listening comprehension correctly

7.3 Impact of the Programme on Picture Narration by Students

In picture narration, a story is narrated to the students in Wagdi(L1) using 4 picture cards (in Appendix A as Figure A1) in a particular sequence, and they were asked to re-narrate the story using the same picture cards. Table 4.5 provides a top-line view of the baseline (July 2019) and endline (April 2022) assessment results by the intervention and the comparison group in the picture narration task. The graph indicates that the students from the intervention schools have performed better; they could secure significantly higher three-year gains i.e., 23.8 % points than the students from comparison schools. The detailed picture-wise assessment is tabulated for the endline against baseline, and in Appendix A as Table A2.

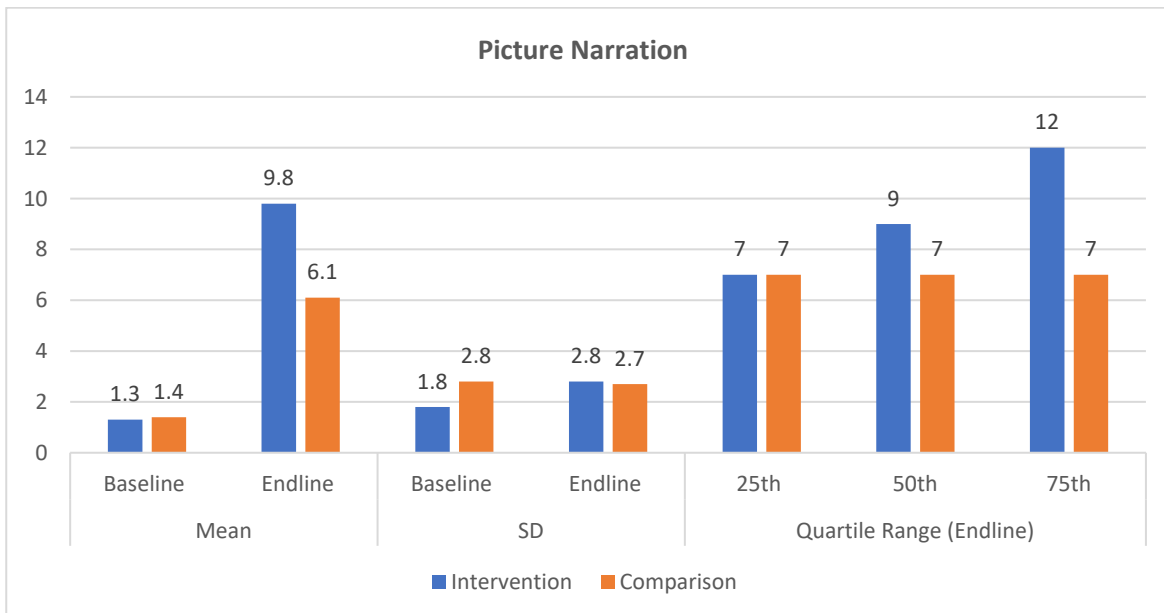
Table 4.5: Picture Narration Results at Baseline and Endline

Intervention Groups		Intervention			Comparison		
Gender		Boy	Girl	Total	Boy	Girl	Total
Baseline	n	48	41	89	34	37	71

	mean (Actual)	1.4	1.3	1.3	1.4	1.4	1.4
	SD (Actual)	1.8	1.9	1.8	2.8	2.8	2.8
Endline	n	44	45	89	33	38	71
	mean (Actual)	10	9.7	9.8	6.2	6.1	6.1
	SD (Actual)	2.9	2.7	2.8	2.5	3.0	2.7
Gain		53.9	8.6	8.4	8.5	4.8	4.7
Difference between Gains in Project and Comparison Groups		Boys=3.8		Girls=3.7		Total=3.8	
% Difference between Gains in Project and Comparison Groups		Boys=23.75		Girls=23.1		Total=23.8	

Picture narration was also one of the sub-tasks where 81.3% students had scored '0' at the baseline. This proportion saw a remarkable reduction at the endline assessment, where only 10% students scored '0'.

Figure 4.4: Performance for Picture Narration



7.4 Impact of the Programme on Letter Identification by Students

Letter identification task was time bound for which students were presented with a grid of 100 letters (each carrying a score of 1 point for correct identification) and asked to identify as many letters as possible in one minute. The main purpose of this activity was to check the familiarity of students with letters and their letter-level reading skill.

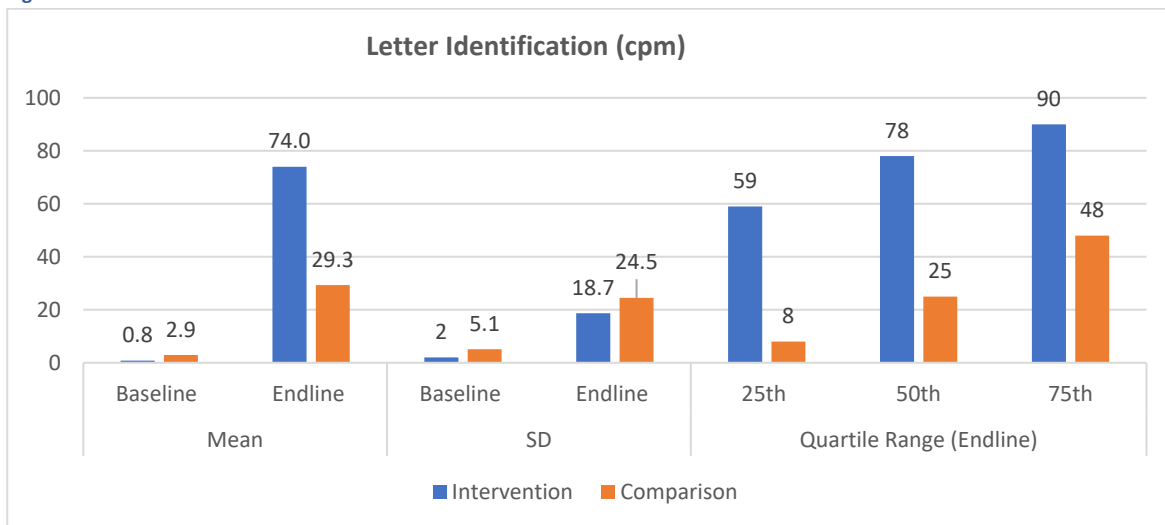
By the end of Grade 3, students from the intervention schools could correctly identify 74 letters per minute, while the students from comparison schools could read only 29.3 letters per minute. The intervention group made significantly high three-year gains (73.2 points), 46.8% higher than the gains made by students in the comparison schools (26.3). The standard deviation was found relatively higher in comparison schools (24.5) than intervention (18.7) Table 4.6, indicating a larger dispersion of scores in comparison schools, compared to intervention schools. The interquartile

analysis also indicates a lower interquartile range in intervention schools (31) than in comparison schools (40).

Table 4.6: Letter Identification Assessment Results at Baseline and Endline

Intervention Groups		Intervention			Comparison		
Gender		Boy	Girl	Total	Boy	Girl	Total
Baseline	n	48	41	89	34	37	71
	mean (Actual)	1.2	0.8	0.8	1.4	4.3	2.9
	SD (Actual)	2.2	2.0	2.0	2.4	6.4	5.1
Endline	n	44	45	89	33	38	71
	mean (Actual)	71.5	76.5	74.0	24.6	33.3	29.3
	SD (Actual)	20.1	17.1	18.7	22.6	25.6	24.5
Gain		70.3	75.7	73.2	23.2	28.9	26.3
Difference between Gains in Project and Comparison Groups		Boys=47.1			Girls=46.7		Total=46.8
% Difference between Gains in Project and Comparison Groups		Boys=47.1			Girls=46.7		Total=46.8

Figure 4.5: Performance for Letter Identification



7.5 Impact of the Programme on Akshar Identification by Students

The akshar identification sub-task was time bound and was intended to measure student's understanding of 'varn' and 'maatras' blends (similar to syllables). In this question, each student was presented with a grid of 60 akshars and was asked to identify the akshars in one minute.

The assessment results for this sub-task showed that students in the intervention schools were reading 45.5 akshars per minute while the students from comparison schools could identify only 18.3 akshars per minute. The standard deviation was found significantly higher in comparison schools (21) in comparison to intervention schools (14.8). Additionally, students in project schools were observed to have made multi-fold and a statistically significant improvement from baseline to

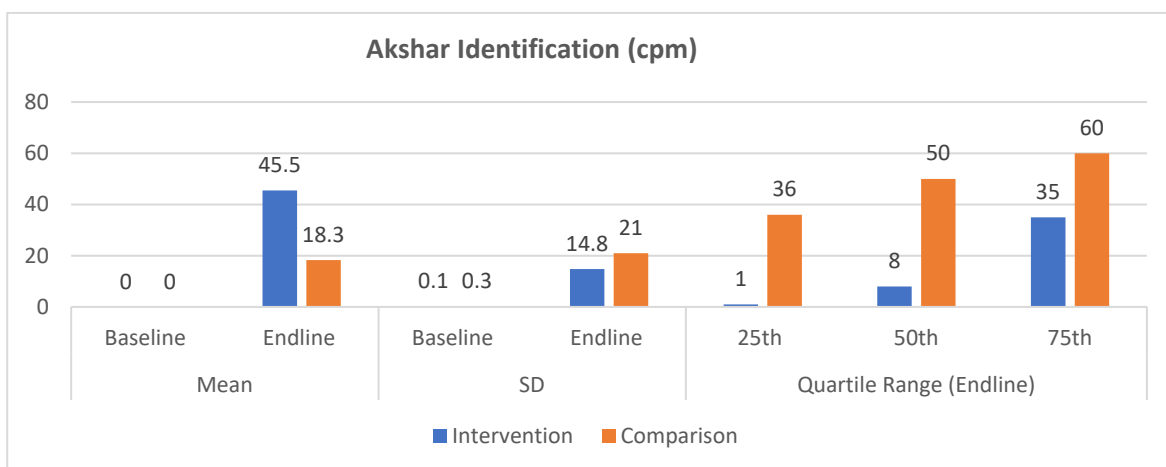
endline in both letter and akshar identification, in comparison with students in comparison schools (Table 4.7).

Table 4.7: Akshar Identification Assessment Results at Baseline and Endline

Intervention Groups		Intervention			Comparison		
Gender		Boy	Girl	Total	Boy	Girl	Total
Baseline	n	48	41	89	34	37	71
	mean (Actual)	0	0	0	1	0	0.2
	SD (Actual)	0.1	0	0.1	0.2	0.3	0.3
Endline	n	44	45	89	33	38	71
	mean (Actual)	42.6	48.4	45.5	11	24.7	18.3
	SD (Actual)	15.9	13.3	14.8	15.7	23.1	21
Gain		42.6	48.4	45.5	10	24.7	18.3
Difference between Gains in Project and Comparison Groups		Boys=32.6			Girls=23.7		Total=27.4
% Difference between Gains in Project and Comparison Groups		Boys= 54.3			Girls=39.5		Total=45.7

The interquartile analysis for akshar identification, also indicates a lower interquartile range in intervention schools (24) than that comparison schools (34).

Figure 4.6.: Performance for Akshar Identification



7.6 Impact of the Programme on Identification of Familiar Words by Students

The familiar word identification was a time bound task. It aimed to assess the decoding and blending skills of students. In this assessment, students were presented with a grid of 50 words (each having one mark), and they were asked to read in one minute.

In familiar word identification, the students in the intervention group were not able to read any words during the baseline assessment, while the mean score in the comparison group was 0.4. By the end of grade 3, in the endline assessment, students in the intervention group had made three-year learning gains of 41.4 points, vis-a-vis gains of 13.9 points made by students in the comparison

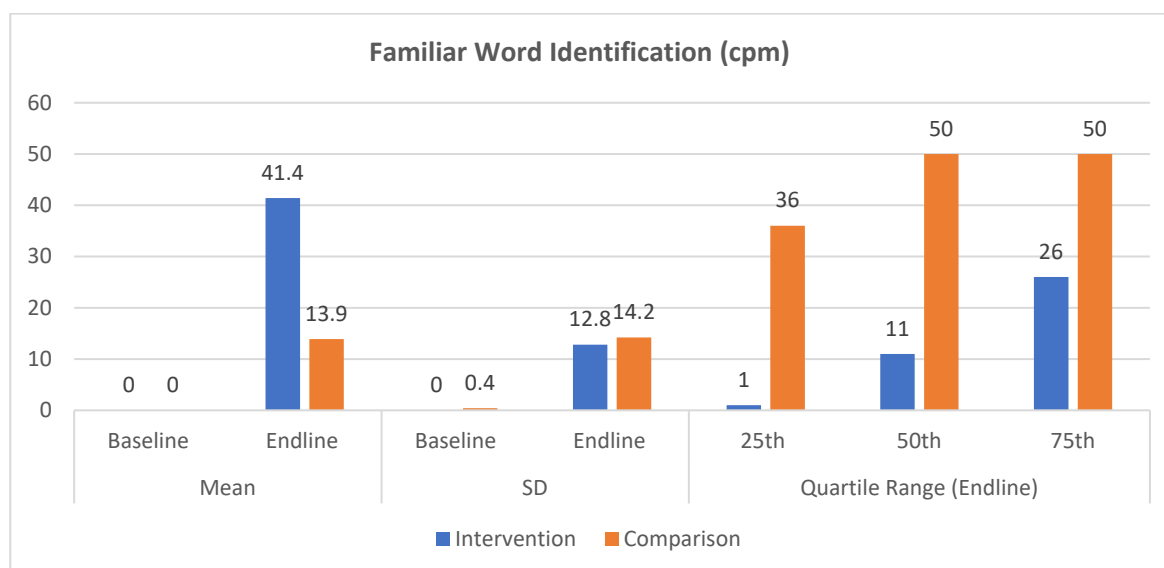
group. The difference in learning gains between the intervention and comparison group was remarkably high (55%). However, the dispersion of scores was also high in both intervention and comparison group schools, reflected in the high standard deviations (12.8 and 14.2 in intervention and comparison, respectively).

Table 4.8: Familiar Word Identification Assessment Results at Baseline and Endline

Intervention Groups		Intervention			Comparison		
Gender		Boy	Girl	Total	Boy	Girl	Total
Baseline	n	48	41	89	34	37	71
	mean (Actual)	0	0	0	0.1	0	0
	SD (Actual)	0.0	0.0	0.0	0.5	0.0	0.4
Endline	n	44	45	89	33	38	71
	mean (Actual)	39.8	43.0	41.4	10.6	16.8	13.9
	SD (Actual)	13.9	11.6	12.8	14.1	13.8	14.2
Gain		39.8	43.0	41.4	10.5	16.8	13.9
Difference between Gains in Project and Comparison Groups		Boys=29.3		Girls=26.2		Total=27.5	
% Difference between Gains in Project and Comparison Groups		Boys= 58.6		Girls=52.6		Total=55.0	

Although standard deviations reflected a similar level of dispersion in scores between intervention and comparison group, the interquartile analysis reflected a greater level of equity in the former group, where the interquartile range in intervention schools (14) was lower than that in comparison schools (25).

Figure 4.7: Performance for Familiar Word Identification



7.7 Impact of the Programme on Oral Fluency of Students

The oral fluency task was also a time bound task aimed to assess students' ability to read with speed, accuracy, and proper expression. A text of 61 words was given to them to read within the time frame of one minute.

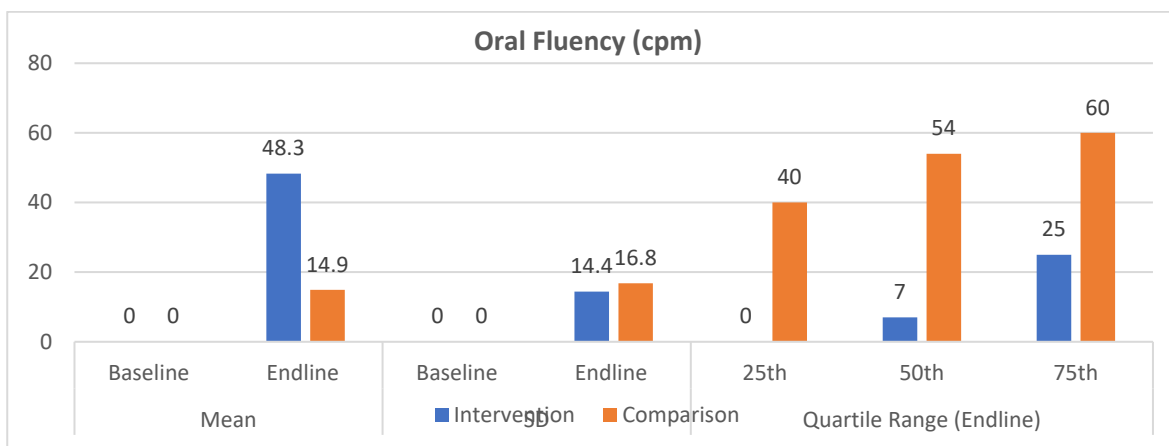
In oral fluency, students in both intervention and comparison schools were unable to read any word in the text during the baseline assessment. Improvement in learning was observed in both the groups in the endline assessment, with the students in the intervention group reading 48.3 words per minute, while the students from the comparison schools read only 14.9 words per minute. The higher gains made by the students in the intervention group in oral reading fluency outcomes, is indicated by the significantly high difference in gains (54.8%) between the intervention and comparison groups. The standard deviation was found to be higher in comparison schools (16.8) vis-a-vis intervention schools (14.4), Table 4.9.

Table 4.9: Oral Fluency Assessment Results at Baseline and Endline

Intervention Groups		Intervention			comparison		
Gender		Boy	Girl	Total	Boy	Girl	Total
Baseline	n	48	41	89	34	37	71
	mean (Actual)	0	0	0	0	0	0
	SD (Actual)	0.0	0.0	0.0	0	0	0
Endline	n	44	45	89	33	38	71
	mean (Actual)	46.6	50.0	48.3	10.7	18.6	14.9
	SD (Actual)	13.5	15.1	14.4	15.3	17.3	16.8
Gain		46.6	50.0	48.3	10.7	18.6	14.9
Difference between Gains in Project and Comparison Groups		Boys=35.9		Girls=31.4		Total=33.4	
% Difference between Gains in Project and Comparison Groups		Boys=58.9		Girls=51.5		Total=54.8	

The interquartile range in intervention schools (20) was marginally lower than that in comparison schools (25).

Figure 4.9.: Performance for Oral Fluency



7.8 Impact of the Programme on Reading Comprehension by Students

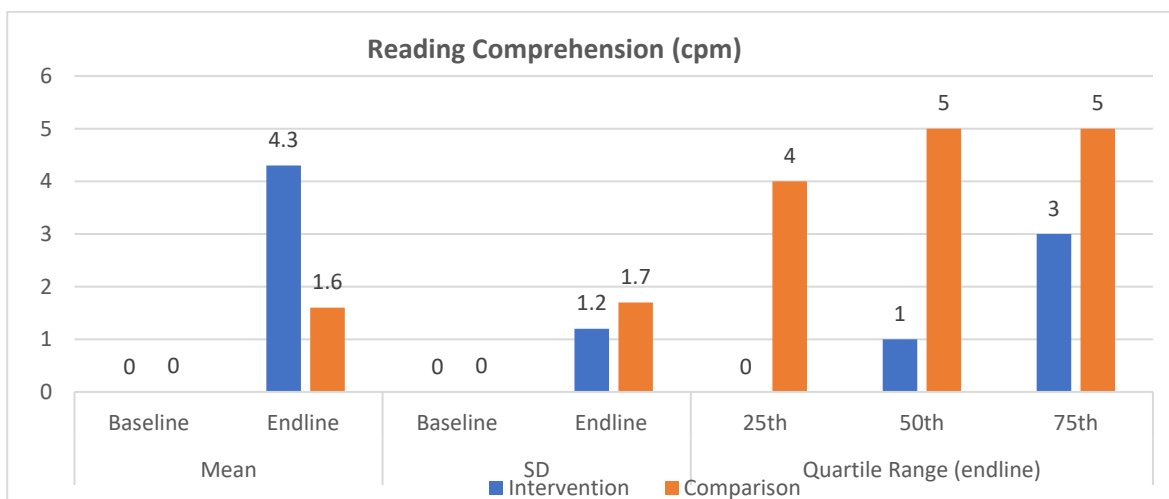
The reading comprehension task was aimed to check the student's ability to read and understand, the meaning of what they are reading. To measure this skill, students were asked up to five questions based on the story they were given to read.

In reading comprehension, students from intervention schools could correctly answer an average of 4.3 questions correctly (out of 5), compared to just 1.6 questions answered correctly by comparison school students. (Table 4.10).

Table 4.10: Reading Comprehension Assessment Results at Baseline and Endline

Intervention Groups		Intervention			Comparison		
Gender		Boy	Girl	Total	Boy	Girl	Total
Baseline	n	48	41	89	34	37	71
	mean (Actual)	0	0	0	0	0	0
	SD (Actual)	0.0	0.0	0.0	0	0	0
Endline	n	44	45	89	33	38	71
	mean (Actual)	4.4	4.3	4.3	1.3	1.8	1.6
	SD (Actual)	1.1	1.3	1.2	1.6	1.8	1.7
Gain		4.4	4.3	4.3	1.3	1.8	1.6
Difference between Gains in Project and Comparison Groups		Boys=3.1			Girls=2.5		Total=2.7
% Difference between Gains in Project and Comparison Groups		Boys= 62			Girls=50		Total=54

Figure 4.10: Performance for Reading Comprehension



7.9 Impact of the Programme on Writing Skill of Students

The writing task tried to understand the crucial parts of learning and assess whether students can listen to the sentence, process it mentally, and are able to write them with correct spelling, and punctuation.

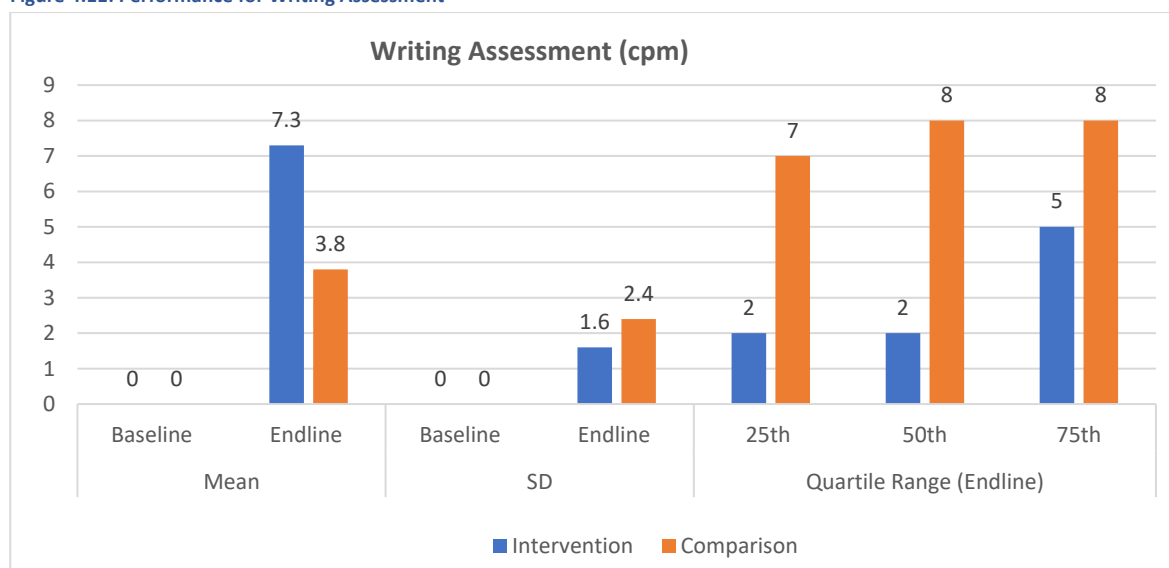
The table indicates that the students from intervention schools have performed better, they could secure significantly higher gains i.e., scored 7.3 points out of total 10 points than the students from comparison schools who scored 3.8 in the same sub-task.. The difference in three-year gains between intervention and comparison group was also significantly high (35%).

There is a difference in performance observed between boys compared to girls, girls performed better in both intervention and comparison with a mean score of 7.5 and 4.3 points respectively. Table 4.11.

Table 4.11: Writing Assessment Results at Baseline and Endline

Intervention Groups		Intervention			comparison		
Gender		Boy	Girl	Total	Boy	Girl	Total
Baseline	n	48	41	89	34	37	71
	mean (Actual)	0	0	0	0	0	0
	SD (Actual)	0.0	0.0	0.0	0	0	0
Endline	n	44	45	89	33	38	71
	mean (Actual)	7.1	7.5	7.3	3.2	4.3	3.8
	SD (Actual)	1.6	1.5	1.6	2.3	2.4	2.4
Gain		7.1	7.5	7.3	3.2	4.3	3.8
Difference between Gains in Project and Comparison Groups		Boys=3.9			Girls=3.2		Total=3.5
% Difference between Gains in Project and Comparison Groups		Boys= 39			Girls=32		Total=35

Figure 4.11: Performance for Writing Assessment

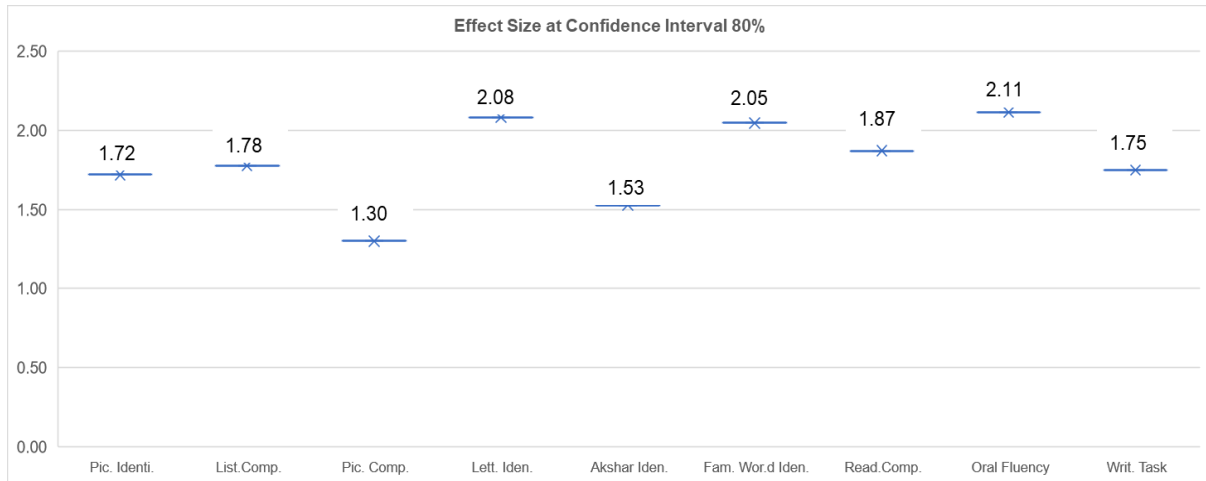


8. Effect Size

In order to measure the magnitude of impact of the programme, effect size was calculated. Effect size is the mean difference in gains between the intervention and comparison schools divided by the individual standard deviation of scores in the two groups of schools. The effect size of the multilingual programme has been large for all sub-tasks, i.e. more than 0.8, which is considered as good, confirming the positive impact of the programme.

In sub-task wise analysis, the largest effect size of 2.11 was observed for oral reading fluency, followed by 2.08 for letter identification, 1.78 for listening comprehension and 1.75 for the writing task (Figure 4.12).

Figure 4.12 Effect Size of various assessments at Confidence Interval of 80%



9. Conclusion and Recommendation

9.1 Conclusion

Based on the above analysis, it is concluded that despite the challenges posed by COVID-19 and a series of lockdowns, the MEL programme has made a significant impact on students. It helped them gain better reading and writing skills than the students at comparison schools.

Students who benefited from the programme could read letters, akshars, and familiar words more accurately and exhibited higher levels of fluency in reading. In addition, the impact of the programme on writing skills of students - considered a higher order literacy skill where early grade students struggle - was also remarkable. The high effect size and the low interquartile ranges, attributable to the programme, observed in each of the sub-tasks are also indicative of the spread of the impact of the programme across students at different learning levels. One of the major highlights of the evaluation was also the absence of non-performers in the intervention schools in all sub-tasks, other than reading comprehension (with 4.5% non-performers). This is in stark contrast to the situation in comparison schools where, during the endline assessment, the proportion of non-performers ranged from 8.5% (in letter recognition) to 43.7% (in reading comprehension). As reading comprehension has emerged as a competency with maximum non-performers across all students assessed, the programme has scope to develop strategies to cater to the challenges faced by students in this competency.

9.2 Recommendation

Medium of instruction is a major reason for exclusion of students⁶, critical for learning outcomes and a primary reason for high dropout rates in these regions. Students face challenges in grasping nontrivial concepts if their home language/mother tongue is different⁷.

The endline assessment found that despite facing similar changes as the socio-economic characteristics of students in the comparison schools, the performance of students in the intervention schools are far better than in the comparison schools. Students in intervention schools not only performed well but they were also confident in communication with the assessment team.

Based on the results which have emerged in the evaluation, CAPL assessment team recommends replication of the MEL project components to other related (specifically tribal dominated areas) locations. It is recommended that LLF share the results of the project with various development partners and advocate for implementation of a three-language formula envisaged under the National Education Policy 2020.

⁶ National Educational Policy 2020

⁷ Home language: is usually the same language as the mother tongue or that which is spoken by local communities.

Appendix – A

The school wise coverage in baseline and endline is presented in the Table A1

Table A.1: Endline Assessment Coverage Vs Planned

Date of visit	Name of the Block	Panchayat Name	School Name	Group	Student Assessment Number planned-revised after training	Actual number of students assessed
20th April	Simalwara	Mevad	Ups Tham Ka Talab	Intervention	18	18
20th April	Simalwara	Mevda	G.P.S.Lamba Pipla	comparison	10	10
20th April	Simalwara	Chadoli	G.P.S.Bamaniya Fala	comparison	7	7
21st April	Sagwara	Virat	Ups Kanela Fala	Intervention	16	16
21st April	Sagwara	Virat	G.P.S..Ratriya Fala	comparison	5	5
21st April	Sagwara	Biliya Badgama	Ups Kesarpura	Intervention	11	11
21st April	Simalwara	Dhambola	Ps Kovadiya Fala Pratham	Intervention	6	6
21st April	Simalwara	Dhambola	G.U.P.S.Kovadiya Fala li	comparison	12	13
22nd April	Simalwara	Gadiya Bhadar	Ps Bamaniya Fala (Bhadar)	Intervention	7	7
22nd April	Simalwara	Chadoli	Ps Naya Talab	Intervention	7	7
22nd April	Sagwara	Biliya Badgama	G.P.S. .Satsalera	comparison	7	6
22nd April	Sagwara	Vageri	Ups Kailashpuri	Intervention	3	3
22nd April	Sagwara	Vageri	G.S.K.P.S.Rajput Basti Parada Moru	comparison	6	4
22nd April	Sagwara	Falated	G.P.S.Katarafala Ft	comparison	6	4
23rd April	Simalwara	Gada Vateshwar	Ps Tanda Fala	Intervention	10	9
23rd April	Simalwara	Gada Vateshwar	G.P.S. Dungra Fala Ward No2	comparison	6	6
23rd April	Sagwara	Semaliya Padya	Ps Gumanpura	Intervention	6	6
23rd April	Sagwara	Buchiya Bada	Ps Balrampur	Intervention	4	4
23rd April	Sagwara	Buchiya Bada	G.U.P.S.Bhuchiya Bada	comparison	4	10
25th April	Simalwara	Gada Patta Peeth	G.P.S..Rajput Fala	comparison	8	8
Total					159	160

Figure -A.1 Picture Comprehensive Narration task









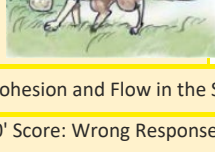
Picture 1	Picture 2	Picture 3	Picture 4
			
एक कागलो हतो। ई एक रूटली लई ने आव्यो। रूटली खावा एक रूकडा माते बेटो।	ई हमरी कागलो राजी थई ग्यो। ऐणे गानु गावा मुंडू उगाड्यू। मुंडू उगाडतेसे ऐनी रूटली निसे पड़ी गई।	एक हियार ऐये आवी। ऐने कागला नी रूटली खवानु थ्यू। ई कागला ने केवा लागी तमे तो असल गानु गो।	हियारे रूटली आपडे मुंडा में दबावी ने तें थकी जाती रई। कागलो घणो दूकी थई ग्यो।

Table A.2: Quality of Narration Baseline and Endline

Pictures	Statements	Baseline									Endline								
		Intervention			comparison			Overall			Intervention			comparison			Overall		
		'0' Score	'1' Score	'2' Score	'0' Score	'1' Score	'2' Score	'0' Score	'1' Score	'2' Score	'0' Score	'1' Score	'2' Score	'0' Score	'1' Score	'2' Score	'0' Score	'1' Score	'2' Score
	Place/Characters/ Beginning of the story	67.4	29.2	3.4	76.1	22.5	1.4	71.3	26.3	2.5	6.7	62.9	30.3	26.8	67.6	5.6	15.6	65.0	19.4
	Problem	76.4	22.5	1.1	84.5	12.7	2.8	80	18.1	1.9	0.0	66.3	33.7	12.7	81.7	5.6	21.3	73.1	5.6
	Feelings/Thoughts of Characters	96.6	3.4	0	90.1	7	2.8	93.8	5	1.3	0.0	58.4	41.6	18.3	74.6	7.0	8.1	65.6	26.3
	Feelings/Thoughts of Characters	68.5	27	4.5	76.1	21.1	2.8	71.9	24.4	3.8	0.0	58.4	41.6	18.3	77.5	5.6	8.1	66.3	25.6
	Peak of the problem	96.6	3.4	0	91.5	7	1.4	94.4	5	0.6	0.0	57.3	42.7	19.7	77.5	2.8	8.8	66.3	25.0
	End of the story	69.7	28.1	2.2	67.6	25.4	7	68.8	26.9	4.4	0.0	60.7	39.3	18.3	76.1	5.6	8.1	67.5	24.4
	Feelings/Thoughts of Characters	90.1	7	2.8	90.1	7	2.8	93.1	5.6	1.3	0.0	61.8	38.2	18.3	74.6	7.0	8.1	67.5	24.4
Cohesion and Flow in the Story		70.8	29.2	0	84.5	12.7	2.8	76.9	21.9	1.3	0.0	56.2	43.8	19.7	74.6	5.6	8.8	64.4	26.9

'0' Score: Wrong Response / No Response, '1' Score: Incomplete details or partially correct details, '2' Score: Sufficient and correct details using meaningful phrases or sentences



Endline Assessment of Students' Learning Outcome for
School-Based MLE Programme in Rajasthan

Final Report
